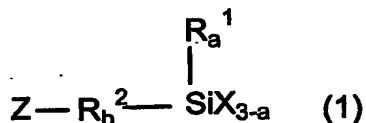


## **CLAIMS**

- 5 1. A silane terminated polymer obtained by addition reaction between an organic derivative of silicon and the terminal functional groups of linear or branched polymers obtained by the Michael polyaddition reaction of sulphhydric acid ( $H_2S$ ) with organic compounds which have at least two alkenyl double bonds activated by the presence, in the alpha position with respect to each alkynic bond, of an electronegative group.

2. The silane terminated polymer according to claim 1 in which the organic derivative of silicon has the general formula:



with  $a = 0, 1, 2$ ;  $b = 0, 1$  and wherein:

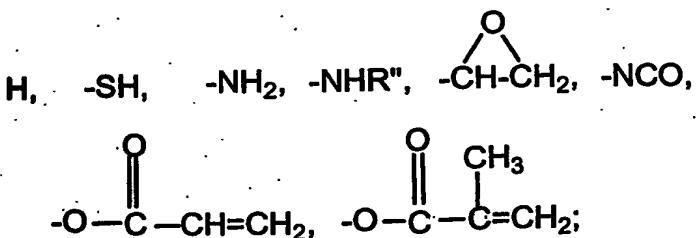
X= selected from the group consisting of halogen, alkoxy, acyloxy, ketoxime, amine, amide and mercaptan radicals;

**R<sup>1</sup>**= monovalent hydrocarbon group;

15 R<sup>2</sup>= divalent substituents selected from the group consisting of hydrocarbon, hetero-hydrocarbon, amino-hydrocarbon radicals;

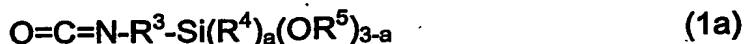
**Z**= substituents selected from the group consisting of:

in which R" represents a monovalent hydrocarbon group.



- 20 3. The silane terminated polymer according to claim 2 in which the organic compounds of silicon of formula (1) are selected from the group consisting of:  
(Isocyanate alkyl)alkoxysilanes:

### (Isocyanate alkyl)alkoxysilanes:



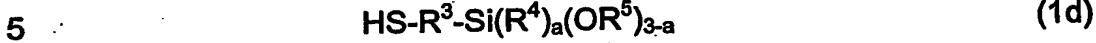
### (Aminoalkyl)alkoxysilanes:



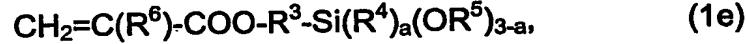
(Glycidoxalkyl)alkoxysilanes:



(Mercaptoalkyl)alkoxysilanes:



([metha]acrylate alkyl)alkoxysilanes:



wherein:

$\text{R}^3$ = divalent alkyl radical containing from 1 to 8 carbon atoms;

10  $\text{R}^4$  and  $\text{R}^5$ = alkyl radicals from 1 to 4 carbon atoms;

$\text{R}^6$ = H or  $\text{CH}_3$ ;

$a=0,1,2$ .

4. A silane terminated polymer according to claim 3 in which the organic compounds of silicon are selected from the group consisting of:

15 (3-mercaptopropyl)trimethoxysilane;

(3-mercaptopropyl)methyldimethoxysilane;

(3-[metha]acryloxypropyl)trimethoxysilane;

(3-acryloxypropyl)trimethoxysilane;

(N-nButyl,3-aminopropyl)trimethoxysilane;

20 (N-Ethyl,3-aminoisobutyl)methyldiethoxysilane;

(3-glycidoxypropyl)trimethoxysilane.

5. The silane terminated polymer according to claim 1 in which the organic compounds useful for Michael polyaddition, having at least two activated double bonds, are selected from the group consisting of:

25  $\text{W}'[-\text{C}(\text{R}^7)=\text{CH}_2]_2 \quad (9)$

$\text{Q}[-\text{W}-\text{C}(\text{R}^7)=\text{CH}_2]_2 \quad (9\text{a})$

$\text{Q}[-\text{W}-\text{C}(\text{R}^7)=\text{CH}_2]_3 \quad (9\text{b})$

$\text{Q}[-\text{W}-\text{C}(\text{R}^7)=\text{CH}_2]_4 \quad (9\text{c})$

wherein:

30  $\text{W}'$ = electron-attractor group selected from the group consisting of:

-SO-, -SO<sub>2</sub>-, -O-, -CO-;

$\text{W}$ = electron-attractor group selected from the group consisting of:

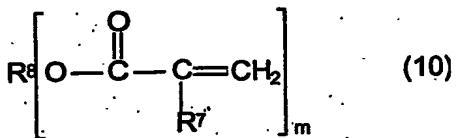
-SO-, -SO<sub>2</sub>-, -O-, -CO-, -O-CO-;

R<sup>7</sup>= -H or -CH<sub>3</sub>;

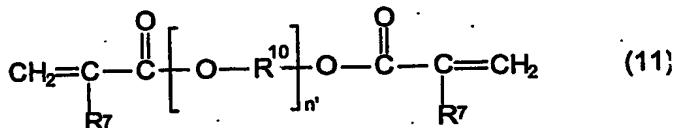
Q= divalent, trivalent or tetravalent group selected from the group consisting of hydrocarbon radicals, hetero-hydrocarbon radicals, polyethers, polyesters, which

5 can contain a repeating unit and hence have variable molecular weights.

6. The silane terminated polymer according to claim 5 in which the organic compounds having at least two activated double bonds, are selected from the group consisting of: di-, tri-, tetra-acrylates; di-, tri- and tetra-methacrylates; di-, tri- and tetra-vinylsulphones.
- 10 7. The silane terminated polymer according to claim 6 in which the organic compounds useful for Michael polyaddition, having at least two activated double bonds, are composed of organic acrylics and/or methacrylics of general formula:



- 15 wherein m= 2, 3, 4; R<sup>7</sup>= H or CH<sub>3</sub>; R<sup>8</sup> is selected from the group consisting of: di-, tri- or tetravalent polyethers which consist essentially of chemically combined OR<sup>9</sup>- units, wherein R<sup>9</sup> is a divalent alkyl group having from 2 to 4 carbon atoms; di-, tri- or tetra-valent linear or branched aliphatic alkyl radicals, preferably from 1 to 50 carbon atoms; di-, tri- or tetra-valent aromatic radicals, preferably from 6 to 200 carbon atoms; di-, tri- or tetravalent linear or branched aryl radicals, preferably from 6 to 200 carbon atoms; or R<sup>8</sup> is one or more combinations of said polyethers, alkyl radicals, aromatic radicals, aryl radicals.
- 20 8. The silane terminated polymer according to claim 7 in which the di-acrylate and di-methacrylate organic compounds are selected from the group consisting of:
- 25 compounds of formula (11)

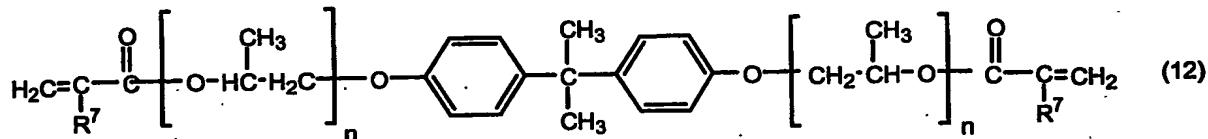


wherein

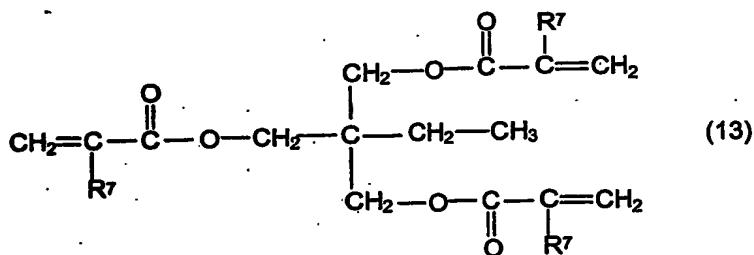
$\text{R}^7 = \text{H}$  or  $\text{CH}_3$ ;  $\text{R}^{10}$  = selected from the group consisting of  $-\text{CH}_2-\text{CH}(\text{CH}_3)-$ ,  $-\text{CH}_2-\text{CH}_2-$ ,  $-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-$ ;  $n'$  = integer comprised of between 1 and 400, preferably between 1 and 200, still more preferably

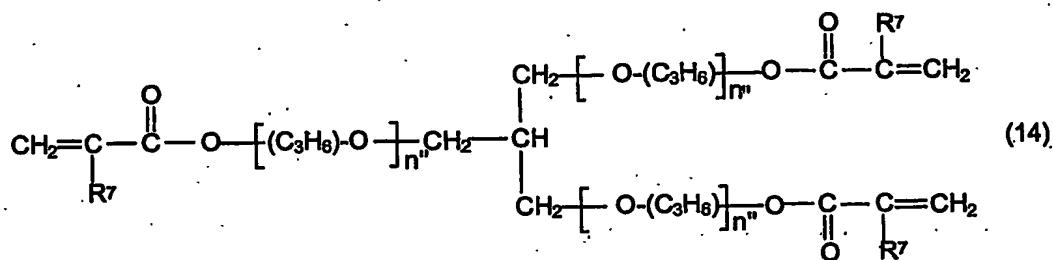
5 between 1 and 50;

compounds of formula (12):



- 10 wherein  $n$  is an integer comprised of between 0 and 10 and  $\text{R}^7$  is  $\text{H}$  or  $\text{CH}_3$ .
9. The silane terminated polymer according to claim 8 in which the di-acrylate organic compounds are the polyisopropylene glycol diacrylates.
10. The silane terminated polymer according to claim 7 in which the tri-acrylate and tri-methacrylate organic compounds are:

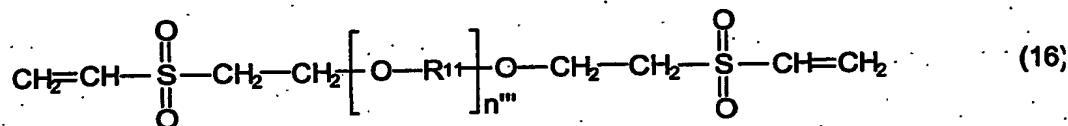




wherein:

$\text{R}^7 = \text{H}$  or  $\text{CH}_3$ ;  $n'' =$  an integer comprised of between 0 and 400, preferably between 0 and 200, still more preferably between 0 and 50.

11. The silane terminated polymer according to claim 6 in which the vinyl-sulphonic  
5 organic compounds are:



wherein:  $\text{R}^{11}$  is selected from the group consisting of  $-\text{CH}_2-\text{CH}(\text{CH}_3)-$ ,  
- $\text{CH}_2-\text{CH}_2-$ ,  $-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-$ ;  $n''' =$  an integer  
10 comprised of between 0 and 400, preferably between 0 and 200, still more  
preferably between 0 and 50.

12. A synthetic process for a silane terminated polymer obtained by the addition  
reaction between an organic silicon derivative and the terminal functional  
groups of linear or branched polymers obtained by the Michael polyaddition  
15 reaction of sulphydric acid ( $\text{H}_2\text{S}$ ) with organic compounds which have at least  
two alkylene double bonds activated by the presence, in the alpha position  
with respect to each alkylene bond, of an electronegative group, the process in  
which the Michael addition reactions are catalysed is by organic bases.

13. The process according to claim 12 in which the organic bases are tertiary  
20 amines.

14. The process according to claim 13 in which the tertiary amines are selected  
from the group consisting of: triethylamine, 1,8-diazadicyclo[5.4.0.]undecene-7  
(DBU), 1,4-diazadicyclo[2.2.2]octane (DABCO).

15. The process according to claim 14 in which the tertiary amine is 1,8-diazadicyclo[5.4.0.]undecene-7 (DBU).